

Erie Canal (Enlarged), Lock 18 (Double Lock)
West of 252 North Mohawk Street
East of Reservoir Street
Between Manor Avenue and Church Street
Cohoes, Albany County
New York

HAER No. NY-11

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PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Office of Archeology and Historic Preservation
National Park Service
U.S. Department of the Interior
Washington, D.C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

ERIE CANAL (ENLARGED), LOCK 18 (DOUBLE LOCK)
HAER No. NY-11

Location: West of 252 North Mohawk Street
East of Reservoir Street
Between Manor Avenue and Church Street
Cohoes, Albany County, New York
Latitude: 42° 46' 50" N. Longitude: 73° 42' 43" W.

Date of Erection: 1837-1842

Present Owner: Estate of Henry Bourgeois and the City of Cohoes

Present Use: Dry and abandoned

Significance: Lock 18 of the Enlarged Erie Canal was part of a scheme to reduce the number of locks between Albany and Schenectady, thus making transportation easier and speedier on what was one of the most difficult stretches of the canal. Promoters of the Enlarged Erie Canal, which was designed by some of the outstanding engineers of the day, believed that by doubling the locks on the canal, and by increasing the size of the locks and the canal bed itself, the economy of New York State would be improved and the chances of competition from railways lessened. Although the lock now contains no water, it remains a fine specimen of canal era masonry work.

PART I. HISTORICAL INFORMATION

A. Physical History

1. Dates of construction: Enlargement of this section of the Canal was under contract in 1836 (Assembly Documents, 1837, No. 73). The contractors' first payment for the work is dated 27 June 1837 indicating that work was underway by that time (Assembly Documents, 1838, No. 6). Masonry work on the lock was completed in 1841 (Assembly Documents, 1842, No. 173). Water was first admitted to the lock on 20 April 1842; regular traffic used the lock the following day (Assembly Documents, 1843, No. 25).
2. Engineers:
 - a. Holmes Hutchinson (1794-1865), a civil engineer, completed rough surveys and estimates for the Enlarged Canal by June, 1834. His plans for the locks on the Enlarged Canal were adopted. Hutchinson served as an engineer on the Erie Canal from 1819

to 1835, and as Chief Engineer from 1835 to 1841. He was involved in the engineering of many other canals in New York, Connecticut, Rhode Island, Massachusetts, and Vermont, and was also a director of two New York railroad companies.

- b. John Bloomfield Jervis (1795-1885) was appointed Chief Engineer of the Eastern Division of the Erie Canal, from Albany to the Rome summit, in 1835, and prepared in that year a report and estimate of the proposed enlargement work. Jervis also served as engineer for various other New York canals, water works, and for several railroad companies.
- c. William Jarvis McAlpine (1812-1890) was a student of John B. Jervis, whom he succeeded as Chief Engineer of the Eastern Division. He was the resident engineer of this section from 1838 to 1846. McAlpine was the engineer most directly involved with the actual construction of the locks. A contemporary source reported that:

The works on all this section [from the Lower Aqueduct to Albany] have been planned by and carried forward under the immediate direction of Mr. McAlpine, the resident engineer, of whose capacity and great efficiency we can speak in terms scarcely too strong and emphatic. (Albany Argus, 22 April 1842).

McAlpine also designed water works in Albany and Chicago, served as a Railroad Commissioner and as State Engineer and Surveyor of New York, and was the engineer for several railroads and bridges.

- d. James T. Smith was paid \$42.52 on 26 June 1837 for "hollow quoin patterns" for use on the Eastern Division (Assembly Documents, 1838, No. 6). Smith is not listed in the Albany, Cohoes, or Troy Directories of this period.
3. Original and subsequent owners: Lock 18 was constructed on land owned by Isaac D.F. Lansing (Assembly Documents, 1835, No. 143). On 15 June 1838 Abraham Lansing appeared before appraisers concerning his claim for damages caused by the construction of the canal on his property, which is indicated on an attached map as including the site of Lock 18 (Albany County Clerk's Office, Deeds, Book 66, p. 180). This property was acquired by the State of

New York and transferred to the City of Cohoes, after the canal was no longer used, about 1916. The City still owns the western portion of the Lock. The City of Cohoes in transactions in 1943 and 1945 granted the eastern portion of the Lock to Albina M. Bourgeois (Albany County Clerk's Office, Deeds, Book 1332, p. 381, Book 1374, p. 425). Mrs. Bourgeois deeded the property to her son Henry Bourgeois in 1953 (Albany County Clerk's Office, Deeds, Book 1375, p. 7). The property is now held by the Estate of Henry Bourgeois.

4. Contractors: Merriam, Carr & Co., and Barker & Smith. The material for the new locks from Cohoes to Albany was "generally of the Amsterdam stone" (Albany Argus, 22 April 1842).
5. Original plan and construction of the structure: The necessity of enlarging the Erie Canal was seen as early as March 1825, seven months before completion of the original canal, when the Canal Commissioners noted the need for double locks and the possibility of constructing a second canal parallel to the first. But it was not until sometime in 1833 that official preparations in the form of preliminary surveys were undertaken to enlarge the canal. On 29 January 1834, the Canal Commissioners submitted a special report to the Legislature concerning the enlargement of the canal in which the Commissioners recommended that the locks be doubled (i.e., that a second lock be constructed beside the original lock). Holmes Hutchinson drew up the surveys, maps, plans, and profiles submitted with the report. Hutchinson recommended the following for Locks number 33, 34, 35, and 36, which at that time were the northernmost locks located in Cohoes and the last before the Lower Mohawk Aqueduct:

These four locks are situated above the Cohoes Falls, adjoining the land of Isaac D.F. Lansing; the road and river so near, on the east side, that the new locks must be placed on the west side of the canal; the additional width to the canal will take the yard in front of Mr. Lansing's brick dwelling-house, and this new line, so near the building will materially injure Mr. Lansing's property.

The excavation will be principally rock, with clay on the surface; the pound reaches between the locks are small, and I would recommend that the upper lock be placed twelve rods to the north, to give greater distance between the locks.

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The canal should be excavated wider opposite the Cohoes Falls, to give the necessary width to pass boats, the excavation would be slate rock, and the work must be done when there is no navigation (Assembly Documents, 1834, No. 88, pp. 20-21).

In response to this report, the Legislature on 6 May 1834 passed "An Act to provide for the improvement of the canals of this state," in which the Canal Commissioners were "authorized and required to construct a second set of lift locks, of such dimensions as they shall deem proper, on the Erie Canal from Albany to Syracuse . . ." (Laws of New York, 1834, Chapter 312).

Hutchinson prepared for the double locks further surveys, estimates, and maps, which were completed in June 1834. On 13 June 1834 the Canal Commissioners "met at Albany, and proceeded through the line, examined the locations recommended by the engineer at the several locks, and the appropriations necessary to be made for them" (Assembly Documents, 1835, No. 143, p. 2). Hutchinson had evidently changed the proposed location of Locks 33, 34, 35, and 36, for he now reported that:

The new locks should be placed on the south side. The excavation will be clay and gravel, and all the foundations slate rock. The land is owned by Isaac D.F. Lansing, and the new location takes his brick dwelling-house, two wood-houses, two wells, his garden, fruit trees and shrubbery, and the western part passes through an old orchard and pasture. (Assembly Documents, 1835, No. 143, p. 45).

Hutchinson's plans for double locks were used in their construction. Included in his report of 31 January 1835, were the following specifications for the new locks:

The following description will show that the new locks are to be made much more perfect than the old; the stone are to be of better quality, and the defects in the first constructed masonry, that are now visible after ten years use, will be a great extent avoided.

For Foundation

The foundation when not on rock or piles, after the pit is escated [sic] and prepared, to be laid

of square timber, 10 inches in thickness, placed so near each other as not to allow a space of more than 4 inches between the timbers.

When piles are used, there shall be four rows under each lock wall, the centres three feet apart, and a row in the centre of the lock with the requisite quantity at the lower mitre sill, and on these piles, the foundation timbers shall be well secured on each row across the lock, by 24 inch treenails.

All the foundation timbers to be 34 feet long, counter-hewed on the upper surface, and firmly bedded, and to have a level surface for plank-ing.

The surface to be covered with 2 1/2 inch hem-lock plank, well laid and secured, and in all cases a lining of two inch pine plank, to be laid on the inside of the lock walls. There are to be two rows of sheet piling, when not in rock, extending across the lock, of at least four feet long.

On slate rock, the foundation timbers shall be of hard wood, and shall extend four inches under each lock wall; under the mitre sill to be 10 inches in thickness, and at the other parts of the lock, 8 inches in thickness, laid in grout or cement. In all cases, the timbers under the mitre sills, to be of hard wood.

Superstructure

1. The locks to be made 138 feet long, 100 feet between the gates, and 15 feet wide; and the walls for an 8 feet lift, to be 6 1/2 feet thick, except the buttresses. There are to be buttresses in the rear of the middle of each lock wall, and an enlargement opposite each recess, and at the ends of the lock; and in general, there is to be a space of 26 feet between the chambers of the new and old locks.

2. The lock walls shall be constructed of compact quarry, grey limestone, perfectly sound and free from seams, flaws, or other defects, and shall be laid in courses.

3. The face stone shall be laid in courses of not less than 10 inches nor more than 24 inches thick; shall be of the same thickness through the whole course. And each stone in every course shall break joints of at least one foot with the stone on which it rests; and every quoin shall measure at least three feet in length of the wall, and shall alternately be a header and stretcher.

4. The front stone shall be cut true and even on the face, sides and ends, and of a uniform thickness between opposite surfaces.--The lower course shall be two feet wide on the top, and bevelled inward so as to increase the lower bed one foot in width, except at the quoins and recesses. The next course shall be three feet wide, and shall break joints at least one foot on the stone back of the face stone. In the second course, there shall be a header of 2 1/2 feet in length on the wall, and extending back into the wall at least five feet, at least one in every twelve feet in the length of the wall. The front of the wall shall be made of such alternate courses to the coping.

5. The backing shall be laid in courses corresponding with the front, with similar headers in the first and alternate course, and placed intermediate the headers from the front. Each stone, including the headers, shall be hammered to regular forms and sides, and shall form good close joints with the contiguous stone, and break joints at least six inches with the stone on which they rest; all the stone shall have beds of at least two feet wide, but opposite the front headers, they shall be of a width to fill the space.

6. The coping shall be at least fifteen inches thick, four and a half feet wide on the upper surface, with a bevel on the back side, extending the lower bed to five feet; each stone to be at least as long as wide, and cut true and even on all their sides, and well secured by clamps and bolts.

7. The front stone, and eighteen inches of the rear of the wall, shall be laid in hydraudlic [sic] cement; and the centre of the wall shall be faithfully grouted, as often as once in every course. Each stone to be laid in cement, shall be fitted

to its bed and position, then raised by machinery, the cement placed, and the stone re-laid in the place previously prepared; and the front stone, and all stone weighing 200 pounds shall be brought, and moved on the lock walls by cranes.

8. The cement to be obtained from Madison or Onondaga, of the best quality, and to be mixed with equal parts of pure, coarse, washed sand, for the grout and mortar.

9. The lock gates to be made of the best white oak timber, and good, merchantable, seasoned white pine plank, and all the iron work to be of approved size and quality.

Masonry, constructed according to the preceding specifications, it is believed, will be reasonably permanent. And although the expense will be greater than any locks heretofore constructed in this State, the increased cost will be fully repaid by their durability. (Assembly Documents, 1835, No. 143, pp. 38-39).

On 11 May 1835 the Legislature passed "An act in relation to the Erie Canal" in which the Canal Commissioners were "hereby authorized and directed to enlarge and improve the Erie Canal, and construct a double set of lift locks therein, as soon as the canal board may be of the opinion that the public interest requires such improvement." (Laws of New York, 1835, Chapter 274, pp. 313-314). The cost of these locks, including their construction and maintenance, was to be paid from the Erie and Champlain Canal fund, not from ordinary repair and maintenance funds of the Erie Canal.

On 30 June 1835 the Canal Board met and adopted the following resolution:

Resolved, That the doubling of the locks, and the works connected therewith, ought to be commenced without delay, and prosecuted with all reasonable dilligence [sic], beginning with that portion of the Canal between the village of Syracuse and the city of Albany. (Assembly Documents, 1836, No. 98, p. 2).

In addition, more surveys were to be begun immediately. Accordingly, John B. Jervis prepared a report and estimate on the enlargement from Albany to Fultonville, which he submitted on 17 October 1835. Acting on the instruc-

tions of the Commissioners, Jervis included two estimates, one for a canal six feet deep and sixty feet wide at the top water line and another for a canal seven feet deep and seventy feet wide. Jervis recommended that the canal be seven feet by seventy feet and that the locks each be 16 feet wide and 110 feet long between quoins. In October the Canal Board approved the seven by seventy dimensions for the enlargement and a few months later decided that the locks should be 110 feet long between quoins and 18 feet wide.

In the same report Jervis advocated abandoning the parts of the old route of the canal at a point below the junction of the Erie and Champlain Canals above Watervliet to the head of the four locks above the Cohoes Falls (i.e., to old Lock 33) and constructing instead a new line. Concerning the four locks specifically, Jervis wrote:

The 4 locks are located so near each other as to allow shorter pound reaches than at other locks and such as to render the navigation extremely inconvenient and embarrassing. To widen the old line and lay the new locks along side of the old ones, I consider entirely out of the question, and a new line indispensable for these locks; which has accordingly been laid, and the estimate made on the same. (Assembly Documents, 1836, No. 99, Document A, pp. 4-5).

In the early spring of 1836, the line was once again surveyed, and in June maps of the line between Albany and Schenectady were submitted to the Canal Board. Members of the Board examined the schemes for this area on the spot and adopted a scheme which called for a new line 4 miles and 28 chains long, beginning at a point 1 1/2 miles above West Troy and joining the old line above the four locks. The Board explained its decision on the new line thus:

The locks are so located as to give convenient pound reaches between them, the lifts of the locks are so arranged as to reduce their number from nineteen to sixteen, without making the lift of either of them over ten feet. This plan will add to the convenience of the navigation, save on annual expense of lock-tending and repairs, and enable the work to be done without the chance of interruption to, or from the navigation. (Assembly Documents, 1837, No. 73, p. 16).

At some time during 1835 or 1836 the locks were renumbered. Previously they had been numbered beginning with the westernmost lock of the Eastern Division and ending with Lock 53 at Albany. Under the revised system, locks were numbered from east to west with Lock 1 located in Albany and the northernmost lock in Cohoes being Lock 18.

Work generally on the new line was put under contract in 1836, evidently during the last half of the year, after the location of the new line had been determined.

The first payment for work on Lock 18 was not made, however, until 27 June 1837. Contractor Barker & Smith was paid \$5,100.00 between 27 June and 18 November 1837 for work on Lock 18. Between 6 January and 31 August 1838 the firm was paid \$4,697.63 for Lock 18. On 20 August 1838 Merriam, Carr & Co. received a payment of \$3,000.00 for work on Lock 17 and 18.

On 18 April 1838 the Legislature passed "An Act to provide for the more speedy enlargement of the Erie Canal," which authorized a four-million dollar loan to finance the enlargement work. The Canal Commissioners encountered difficulties in obtaining some of the funds authorized in this loan, however, and that situation impeded work by the contractors in 1839. The Commissioners reported that:

A large amount of work has been done on the enlargement during the past season [1839], but not as much as was contemplated at the date of the last annual report. . . Generally the contractors were not pressed to a vigorous prosecution of their work

[But] A heavy amount of work has been done on the first 14 miles from Albany

A lock of wood has been constructed at the Cohoes [Falls] for temporary use, while the enbankment [sic] for the enlargement is making opposite, which is to cover the site of the present lock. The lock of wood is completed, and will be ready for use in the spring; but the present lock for which it is a substitute, should not be taken up, until after the new lock has been satisfactorily tested. (Assembly Documents, 1840, No. 60, pp. 46-48).

In 1839 Barker & Smith received a final payment of \$974.23 for "Lock 18, and additional allowance." Merriam, Carr & Co. received \$31,200.00 for Locks 17 and 18.

Between April and December 1840 the Commissioners reported that "the construction of the work has been advanced more rapidly than in any previous season," due in part to the lowered cost of materials and labor as well as to favorable weather (Assembly Documents, 1841, No. 72, p. 19). Work on Section 10, in which Lock 18 was located, was not as far advanced as on other parts of the new line. The contractors were busy on Section 10 with "a heavy side hill excavation and embankment [sic]," and work on Lock 18 was described as being "in a forward state" (six other locks on the line had been completed except for the gates) (Ibid.). The Commissioners hoped that:

with the proper energy on the part of the contractors, all the work on this line can be completed next season [1841], in time to admit the water, and test its permanency, before the close of navigation so that it can be safely brought into use in the spring of 1842. (Assembly Documents, 1841, No. 72, p. 22).

Merriam, Carr & Co. received a payment of \$14,500.00 for work during 1840 on Locks 17 and 18.

The accounts for expenditures during 1841 when much of the work on Lock 18, as well as on Lock 17, was done, were not, unfortunately, published. However, a report published in 1842 stated that Merriam, Carr & Co. had been paid \$146,221.00 for all their work to date on Locks 17 and 18. Since that firm had received \$48,700.00 through 1840, it could be assumed that the firm received \$97,521.00 for work during 1841 on the two locks. The firm received \$1,550.00 for work in 1842.

During 1841 contracts were let for paddle and valve gates for Lock 18. The masonry work on all locks under contract between Albany and the Lower Aqueduct was completed by 25 January 1842, although the work on the rest of Section 10 was behind schedule.

Evidently the line was tested at some time before 30 November 1841, when navigation was closed for that year; for in the following spring, on 20 April water was let into the canal. A special party including the Canal Board, the comptroller, the contractors,

and resident members of the Legislature, traveled on that day from the Lower Aqueduct to Albany on board two boats, the Enlargement and the G.W. Little. In celebration of the occasion, the boats bore American flags, and a brass band was aboard, as well as a six-pounder which fired salutes along the route. The party left the Aqueduct at noon and arrived at Albany between five and six p.m., having traveled over 11 miles of the Enlarged Canal and through 18 locks. It was expected that the new line would reduce the travel time between Albany and Schenectady by five or six hours. A contemporary source noted that the new locks:

will vie with any work of the kind in America, for capaciousness, and for solidarity and beauty of masonry . . . Notwithstanding their greatly increased size, they are worked with surprising ease and rapidity, the average time of locking in and out for each boat being only one minute and twenty seconds.
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But the difficulties of a part of the route were truly formidable. At the Cohoes [Falls], in attaining the elevation, the new route passing above the factories, the side hill was cut off 126 feet above the bottom of the canal, so that we now look upward on one side to that altitude, while on the other is an embankment [sic] from 30 to 60 feet in height. This proved to be the most difficult portion of the route, the hill being of hardpan formation, and requiring continued blasting, and the embankment [sic] requiring in its unfinished state, the greatest skill and care to prevent its yielding to the pressure. (Albany Argus, 22 April 1842).

In 1843 an additional payment of \$9051.41 was made to Merriam, Carr & Co. for Locks 17 and 18. A locktender's house was not immediately constructed. A grocery store and barn, dating from before 1834, were located just west of Lock 18.

6. Alterations and additions: The gates of the lock have been removed. The portion of the lock owned by the City of Cohoes is being filled in because of alleged danger to children. The Bourgeois portion, according to the owners, will be preserved in its present state.

B. Sources of Information

1. Maps:

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Statistical Profile, Erie Canal Enlargement, Eastern Division, Commencing in the City of Albany and Terminating at Higginsville. Albany: R.H. Pease, 1851.

2. Primary Sources:

New York. Annual Report of the Canal Commissioners, Assembly Document, No. 88, January 29, 1834.

_____, No. 85, January 24, 1835.

_____, No. 65, January 20, 1836.

_____, No. 73, January 25, 1837.

_____, No. 159, March 10, 1838.

_____, No. 86, January 22, 1839.

_____, No. 60, January 28, 1840.

_____, No. 72, January 27, 1841.

_____, No. 24, January 25, 1842.

_____, No. 25, January 22, 1843.

_____, No. 16, January 13, 1844.

New York. Annual Report of the Comptroller, Assembly Document No. 16, 1839.

New York. Annual Report of the Comptroller, Relative to the Expenditures on the Canals. Assembly Document No. 56, February 10, 1843.

_____, No. 6, January 3, 1838.

_____, No. 131, January 31, 1840.

_____, No. 51, January 21, 1841.

_____, No. 105, March 2, 1844.

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New York. Documents accompanying the Report of the Canal Board. Assembly Document 99, January 26, 1836.

New York. Laws, 1835. Chapter 274, "An act in relation to the Erie Canal," May 11, 1835.

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New York. Laws, 1838. Chapter 269, "An act to provide for the more speedy enlargement of the Erie Canal," April 18, 1838.

New York. Report of the Canal Board. Assembly Document No. 98, January 26, 1836.

New York. Report of the Canal Board in answer to resolutions of the Assembly respecting the canal debts and revenues, and the enlargement of the Erie Canal, &c. Assembly Document No. 306, 1840.

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3. Secondary Sources:

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Shaw, Ronald E. Erie Water West, A History of the Erie Canal 1792-1854. Lexington: University of Kentucky Press, 1966.

Whitford, Noble. History of the Canal System of the State of New York. Albany: By the State Engineer and Surveyor, 1906.

Prepared by Diana S. Waite
Architectural Historian
October 1969

PART II. ENGINEERING INFORMATION

A. General Statement

1. Structural character: Locally known as the "Double Lock," Lock 18 is part of the Enlarged Erie Canal system of 1840. The masonry lock chambers, which is all that remains, are rapidly being filled with refuse and earth.
2. Condition of fabric: Good to fair.

B. Description

1. Shape: Long rectangle.
2. Foundation: Cut stone laid in random manner, probably limestone.
3. Wall construction: Cut stone laid in random ashlar pattern. The blocks are approximately three feet long, two feet deep, and one and one-half feet wide.
4. Note: The lock gates were of wood, but no traces of the gates or their hardware survive.

C. Site

1. General setting: Northwest of the Harmony Mills complex on the west side of North Mohawk Street and due west of the end of the Cohoes Power Canal.
2. Orientation: North to south.

Prepared by Richard J. Pollak
Professor of Architecture
Ball State University
25 August 1969

PART III. PROJECT INFORMATION

These records were prepared as part of the Mohawk-Hudson Area Survey, a pilot study for the Historic American Engineering Record which was established in 1969 under the aegis of the Historic American Buildings Survey. The project was sponsored jointly by the National Park Service (Historic American Buildings Survey), the Smithsonian Institution (National Museum of History and Technology), the American Society of Civil Engineers (National Headquarters and Mohawk-Hudson Section), and the New York State Historic Trust. The field work and historical research were conducted under the general direction of Robert M. Vogel, Curator of Mechanical and Civil Engineering, Smithsonian Institution; James C. Massey, Chief, Historic American Buildings Survey; and Richard J. Pollak, Professor of Architecture, Ball State University, Project Supervisor; and with the cooperation of the Department of Architecture, Rensselaer Polytechnic Institute.